

**Biological Evaluation and Effects Analysis for
Proposed, Endangered, Threatened, and Sensitive Plants**

Longley Meadows Fish Habitat Enhancement Project

**Wallowa-Whitman National Forest
Whitman Ranger District**

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April 10, 2019
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INTRODUCTION

This Biological Evaluation (BE) analyzes effects or impacts from the proposed action and alternatives to plants listed threatened or endangered species, or proposed for listing, and Forest Service sensitive plant species. A BE is prepared for any planned, funded, executed, or permitted programs and activities for possible effects to proposed, threatened, endangered, or sensitive (TES) species. The BE is the means of conducting the review and documenting the findings (FSM 2672.4). The objectives of the BE are to

- 1) ensure that Forest Service actions do not contribute to the loss of viability of any native or desired non-native plant animal species or contribute to trends toward Federal listing of any species;
- 2) comply with the requirements of the Endangered Species Act that actions of Federal agencies not jeopardize or adversely modify critical habitat of Federally listed species; and
- 3) provide a process and standard by which to ensure that threatened, endangered, proposed, and sensitive species receive full consideration in the decision making process

This BE evaluates the following: 1) the Pacific Northwest Region Regional Forester's Sensitive Species list (January 2015 - <http://www.fs.fed.us/r6/sfpnw/issssp/agency-policy>), for plant species known or with potential to occur on the Wallowa-Whitman National Forest (Appendix A); and 2) threatened endangered or proposed species as indicated by the U.S. Department of Interior, Fish and Wildlife Service, Oregon Fish and Wildlife Office website (<http://www.fws.gov/oregonfwo/Species/Lists/RequestList.asp>) updated October 2016. This link references the list of threatened and endangered species that may occur in selected Oregon counties. One plant species is listed for Union County, Howell's spectacular thelypody (*Thelypodium howellii* ssp. *spectabilis*), a threatened plant.

This following is a listing of 18 sensitive plant species which were identified in the pre-field review as potentially occurring within the Longley Meadows Fish Enhancement project area (Longley).

- *Botrychium ascendens*, *B. campestre*, *B. crenulatum*, *B. lineare*, *B. lunaria*, *B. montanum*, *B. paradoxum* and *B. pedunculatum*.
- *Carex cordillerana* and *Carex retrorsa*
- *Cypripedium fasciculatum*
- *Eleocharis bolanderi*
- *Lycopodium complanatum*
- *Phacelia minutissima*
- *Phlox multiflora*
- *Plantanthera obtusata*
- *Schistidium cinclidodonteum* and
- *Trifolium douglasii*

DESCRIPTION OF PROPOSED ACTIONS

The natural processes within the Upper Grande Ronde River system have been negatively impacted by disturbances including: timber harvest, splash dams, and hydraulic mining, dredging, railroad and road embankments. In the recent past, the project area has been heavily

utilized as a dispersed camping site, with multiple travelways that directly access the Grande Ronde River. Remnants of the Mount Emily Logging Company railroad grade have been breached and removed in a few locations, but still act as a barrier to natural floodplain activities and water storage.

Primary actions proposed under Longley include restoring degraded riparian and floodplain habitats, improving instream habitat diversity, and improving water quality for adult and juvenile summer steelhead and spring Chinook salmon.

Rehabilitation objectives focus on (1) channel-floodplain interactions, (2) re-meandering the channel, (3) channel planform, geometry and bedform diversity, and (4) enhancing fish cover.

There are two alternatives developed and analyzed under Longley. They are briefly summarized in the table, below. Refer to The EA for specifics of the following proposed restoration activities/actions which include:

Table 1. Brief Summary of Alternatives

<u>Alternative 1 – No-Action Alternative</u>	No project activities would be authorized under this alternative and there would be no improvements or changes made. The area would continue to be managed as is.
<u>Alternative 2 – Proposed Action Alternative</u>	<p>This is the proposed action that would respond to the purpose and need and accomplish project objectives. Proposed actions include:</p> <ul style="list-style-type: none"> - Dewatering / Fish rescue (0.7 miles) - Staging and storage areas (10.8 acres) - Channel realignment (8.3 acres) - Instream enhancement (335 large wood structures); 986 boulders (2.4 acres) - Road work (1.7 miles): Temporary Access Roads (1.7 miles = 3.2 acres); 3 temporary river crossings; No culvert replacement - <u>Private Lands Activities</u>: La Grande Rifle and Gun Club. Side channel excavation (0.1 miles), berm and swale construction (1 acre)

Botanical Project Design Features and Mitigations

To minimize or eliminate deleterious impacts to TES plants or potential TES/Native plant habitat, the following Project Design Features have been incorporated into the action alternative.

- ◆ To protect native plant habitat and potential habitat for sensitive plant species from competition with undesirable non-native species, follow Forest Plan and Regional guidelines for including weed spread prevention measures in implementation contracts and for utilizing native species for restoration and erosion control work.
 - Minimize road and landing locations in RHCAs;
 - to minimize disturbance of riparian ground cover and vegetation.

- ◆ Rehabilitate landings after completion of timber harvest activities where needed to minimize colonization by undesirable plant species and to minimize bare soil;
- To protect potential sensitive plant habitats, avoid ground disturbing activities (piling, decking, motorized travel, parking, staging operations) on previously undisturbed non-forested terrain.
- To protect native plant habitat and potential habitat for sensitive plant species from competition with undesirable non-native species, follow Forest Plan and Regional guidelines for including weed spread prevention measures in implementation contracts and for utilizing native species for restoration and erosion control work.
- To protect native plant habitat and potential habitat for sensitive plant species from the potential cumulative effects of soil disturbance and erosion as a result of vegetation management activities:
 - Rehabilitate landings after completion of timber harvest activities where needed to minimize colonization by undesirable plant species and to minimize bare soil;
 - Use BMPs (e.g. scattering slash, seeding, construction of waterbars) to minimize erosion from skidtrails.

DESCRIPTION OF THE ACTION AREA

Longley extends approximately 1.5 miles along the mainstem upper Grande Ronde River.

Table 2. Project Area

Project Area Boundary (PAB) Acres	<u>Project Area Acres</u>
	139
	111
	15
<ul style="list-style-type: none"> • USFS Lands • Private Lands • State Lands/ODOT 	13
Subwatershed:	<u>Project Area Acres</u>
	135
	4
<ul style="list-style-type: none"> • USFS Miles • Private Land Miles 	<u>Project Area Acres</u>
	1.5
	1.25
	0.25

Past anthropogenic disturbances have resulted in the loss channel structures, vegetation and floodplain habitat.

The analysis area is characterized by a mixture of coniferous and deciduous tree species including Ponderosa pine, Englemann spruce; and willow, alder, quaking aspen and black cottonwood. Existing riparian vegetation includes scattered patches of woody shrubs, immature trees, and mesic forbs. A large portion of the area consists of annual grasses and non-native herbaceous vegetation where the floodplain had been cleared and drained for ranching.

AFFECTED ENVIRONMENT

The Forest Geographic Information System (GIS), rare plant data base (NRIS), and District files were examined to identify whether any threatened, endangered or sensitive (TES) plants or potential habitat are known in or near the analysis area boundary (PAB). There are no documented occurrences within the project area boundary.

Based on present available information, it was determined that the analysis area contains potential TES plant habitat. A pre-field review of district data and the Wallowa-Whitman sensitive plant list shows that the analysis area contains potentially suitable habitat for 18 TES plants (Table 3). The table includes an assessment as to the likelihood of these species occurring in the analysis area.

Table 3. Pre-field species checklist for Longley Meadows analysis area

Scientific name	Common name	Habitat summary	Likelihood of occurring within the analysis area
<i>Botrychium ascendens</i>	Upward-lobed moonwort	Moist meadows, edges of ponds and lakes, grassy forests. Some species have been found under various species of conifer trees. Sandy soils, or areas moist in spring. In forested areas, often associated with queens-cup bead lily or strawberries.	Habitat is present in the area, especially along the mesic seepy areas. The most likely species would be <i>B. montanum</i> .
<i>Botrychium campestre</i>	Prairie moonwort		
<i>Botrychium crenulatum</i>	Crenulate moonwort		
<i>Botrychium lineare</i>	Slender moonwort		
<i>Botrychium lunaria</i>	Common moonwort		
<i>Botrychium montanum</i>	Mountain grape-fern		
<i>Botrychium paradoxum</i>	Twin-spiked moonwort		
<i>Botrychium pedunculosum</i>	Stalked moonwort		
<i>Carex cordillerana</i>	Cordilleran sedge	Dry forests and riparian woods. Mid-elevations.	Potential habitat may occur within the project area.. One site is located further up on the Grand Ronde River.
<i>Carex retrorsa</i>	Retorse sedge	Swamps, wet thickets, often along streams, marshes, sedge meadows, shores of streams, ponds, and lakes. Our populations are on basalt and other volcanic derived soils.	Potential habitat unlikely to occur. One known location on Eagle Creek on the east side of the district, but has not been relocated.
<i>Cypripedium fasciculatum</i>	Clustered lady's-slipper	Forest, grand fir to Ponderosa pine, and warm riparian forests. Populations generally found in 60-100% shade. Ultra basic soils, granitics, schists, limestone, and quartz-diorite. Rocky to loamy soils in damp to dry sites. Seeps / springs.	Potential habitat may occur within the project area, however no sites known for the W-WNF. One historic collection on the east side of the district. Has not been relocated.
<i>Eleocharis bolanderi</i>	Bolander's spikerush	Fresh, often summer-dry meadows, springs, seeps, stream margins. Wet places, low to mid-montane. In vernal wet swales. Along intermittent streams, moist meadows.	Potential habitat may occur in within the project area. Known sites occur within the Starkey area of the LGRD.
<i>Lycopodium complanatum</i>	Ground cedar	Dry open coniferous or mixed forest alpine slopes; coniferous forest, with thick duff. Often on rotting logs, moist forest, riparian areas. Also in meadows and on open ridge tops.	Very unlikely. This species is very rare in northeast Oregon but one site is documented for LGRD within the Grande Ronde Watershed.
<i>Phacelia minutissima</i>	Dwarf phacelia	Moist meadow and seep edges, or on vernal wet open meadows and barren slopes. Reported to occur with aspen in other areas. Gravely, clay-loam, well-drained soils.	Suitable habitat may occur in the project area, primarily associated with aspen. Known populations occur on the east side of the district.

Scientific name	Common name	Habitat summary	Likelihood of occurring within the analysis area
<i>Phlox multiflora</i>	Many-flowered phlox	Basalt cliffs, rocky outcrops, rocky openings in dry forest. Wooded rocky areas, as well as in openings in the forest. Loose substrate rather than exposed hard rocks. Residual soils, gravels, cobbles.	Unlikely to occur in the analysis area; however populations are located in forested habitat, upstream of the project area.
<i>Platanthera obtusata</i>	Small northern bog-orchid	Mesic to wet coniferous forest, forested fens, sphagnum bogs, stream banks, tundra, moist roadsides; 0-3500 m (18). Some-times found growing on top of rotting logs. Often with Engelmann spruce, or sub-alpine fir. Not necessarily on limestone soils.	Not likely to occur in the project area. Prefers moister, boggy habitat that is not present in the analysis area.
<i>Schistidium cinclidontium</i>	Moss	Not much known about this species. Forms large loose or dense sods on wet or dry rocks or on soil in crevices of rocks and boulders often along intermittent streams at elevations of 5,000-11,000 ft. Could include ponderosa pine forest type.	Not likely to have suitable habitat in the analysis area.
<i>Trifolium douglasii</i>	Douglas' clover	Moist or mesic meadows, prairie remnants, along riparian areas along streams. In swales, along intermittent streams, and in vernal wet areas. Alluvial soils, ash/clay, fine silt to sandy.	Not likely to occur within the project area. Although it does occur within suitable areas upstream of the project area.

FIELD SURVEYS

Surveys were conducted during the summers of 2015 and 2016 to determine the presence of species suspected to occur in the analysis area.

A mix of intuitive controlled and intensive surveys were conducted on May 11 and 14; June 9, and July 21 of 2015; and May 10, 13, 19 and 25; June 21, 24 and 28; and July 11 and 21 of 2016. Survey areas were identified based on where ground disturbing activities were proposed to occur and areas with suitable habitat, as estimated from aerial photography and site visits. Surveys focused on those species most likely to occur, and areas of previously disturbed areas as well as those which would likely be highly altered by proposed project activities. Surveys were conducted by forest service personnel during the appropriate times for identifying species of concern.

Additional information regarding existing vegetation was found within the publication Riparian Vegetation Mapping In The Grande Ronde Watershed, Oregon; Monitoring And Validation Of Spring Chinook Habitat Recovery And Population Viability – Summary of Field Observations, Data and Mapping; prepared by the Environmental Research & Services; Anchorage, Alaska & Forest Grove, Oregon; and Elizabeth Crowe; Fort Collins, Colorado. A portion of these surveys overlap with the Bird Track Springs Fish Restoration analysis area.

The intuitive, random meander (Nelson 1985) was used to conduct the botanical surveys. With this method, the surveyor meanders throughout the area honing in on suitable habitat for plant species of interest. The intuitive meander is the agency standard and, as applied to this analysis area, is adequate to detect the target species. The intuitive meander was also used to survey the proposed activity area on private lands; at a level appropriate to the risk of impacting the plant species.

Results

The pre-field assessment identified 18 species that could have potential habitat within the analysis area (Table 3). Field surveys primarily focused on areas of potential habitat for riparian

associated plant species, those most likely to occur. No TEPS species were located.

Due to the nature of the project, there would be large areas of soil disturbance; yet many areas of vegetation will be salvaged to reuse in the project. Connecting old channels; soaking the floodplain and storing water to better utilize precipitation and snow/flood events would improve fish habitat through higher flows/pools and cooler water temperature. With a higher water table, there should be an increase of mesic/wetland associated plant species, and potentially suitable habitat for TES plant species.

Survey records, aerial photos and site visits were also used to locate special habitats; which were thoroughly searched. These unique habitats are of particular interest because they often provide suitable habitat for sensitive species; including:

- Riparian habitats including seeps, springs and small tributary streams;
- Aspen groves;
- Wet meadow habitat;

Much of the area has been highly disturbed from previous recreational activities including dispersed/group camping, and cross country travel by motorized vehicles.

The following five species identified in the pre-field review are considered highly unlikely to occur in the project analysis area: *Carex retrorsa*, *Phlox multiflora*, *Planthera ocbtusata*, *Schistidium cinclidodonteum* and *Trifolium douglasii*.

These species are presumed not present within the analysis area; project effects to these five species are not discussed further. (Refer to Table 3. Pre-field checklist for reasoning.)

ENVIRONMENTAL CONSEQUENCES

Regulatory Framework

To meet Forest Service objectives for sensitive species, one of the following determinations, as analyzed through the biological evaluation, must be found for each sensitive species, or its habitat, that may be affected by the project (USDA Forest Service 1995):

- “No impact”;
- “Beneficial impact”; or,
- “May impact individuals or habitat, but will not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species.” Activities or actions that have effects that are immeasurable, minor or are consistent with conservation strategies would receive this conclusion.

For populations that are small or vulnerable each individual may be important for short and long term viability. The loss of individuals or habitat can be considered significant when the potential effect on a species may

- Contribute to a trend toward federal listing;
- Result in a significantly increased risk of loss of viability to a species; or,
- Result in a significantly increased risk of loss of viability to a significant population.

If the project analysis concludes that impacts to individuals of a sensitive species would result in any one of these three conditions, then the appropriate finding is, “will impact individuals or habitat with a consequence that the action may contribute to a trend towards federal listing or cause a loss of viability to the population or species.” This finding would not be consistent with Forest Service objectives for sensitive species.

Methodology and Measurement Indicators

The direct, indirect and cumulative effects analysis area is equivalent to the project area boundary. The actions proposed within the project area boundary would not affect federally listed or regional forester sensitive species beyond the project area boundary.

The anticipated project effects of each alternative were evaluated in the biological evaluation (available in the project file) and a determination of “no impact,” “beneficial impact,” or “may impact individuals or habitat, but will not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species” was reached for each sensitive species known to exist in, or have suitable habitat, within the project area. In situations where individual plants of a species may be affected by project activities, no standard exists by which to compare anticipated levels of impact before crossing the threshold where a loss of viability to the species or significant population would be expected. Professional judgment is used to analyze whether the magnitude of effects are immeasurable, minor or rise to the level of significant loss of species or population viability.

Threatened and Endangered Species

The U.S. Fish and Wildlife Service provides species lists for actions carried out, funded or authorized by Federal agencies via the Internet at:
<http://www.fws.gov/oregonfwo/Species/Lists/RequestList.asp>.

Because there is no listed threatened or endangered plant habitat or populations in the analysis area, this project would have no effect to this federally threatened plant species.

Regional Forester's Sensitive Species

The following 13 species may exist within Longley. No sites for any R-6 sensitive plant species were located.

Botrychium species (Grapeferns/Moonworts): *Botrychium ascendens*, *B. campestre*, *B. crenulatum*, *B. lineare*, *B. lunaria*, *B. montanum*, *B. paradoxum*, *B. pedunculatum*

There are no known *Botrychium* populations within the analysis area but there is potential habitat. *Botrychium* species are reported from floodplain terraces near perennial streams, mossy granite ledges in the splash zone of streams, mesic meadows and damp ground in forested settings. They have been affiliated with semi-permanently flooded marshy meadows and small forb dominated openings adjacent to, or within cool, moist forest stands of Engelmann's spruce, lodgepole pine, or grand fir. None of the eight *Botrychium* species identified in the pre-field review were discovered. Survey dates were an appropriate time of year to search for these *Botrychium* species.

DIRECT, INDIRECT and CUMULATIVE EFFECTS

Botrychium species are known from mesic areas. Because Longley would affect much of the riparian areas and other mesic features, project impacts could occur.

A limited amount of log skidding through riparian zones could negatively impact these plant species by soil disturbance and removing vegetation from suitable habitat areas. It is unlikely that placement and use of storage areas, stockpile areas and access areas will impact suitable habitat. While habitat and *Botrychium* sites have been located upstream within the Grande Ronde River watershed. Many areas of suitable habitat were searched, however no plants were located.

Other possible actions within the analysis area such as road maintenance and ongoing activities like recreation are unlikely to impact *Botrychium* because any potential habitat has already been negatively impacted.

Botrychium species may occur in the analysis area; and may be negatively impacted by project activities; however cumulative impacts would not increase significantly.

DETERMINATION AND CONCLUSION

This project **may impact** *Botrychium* plants or habitat, but will not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species. (MIIH).

Carex cordillerana (cordilleran sedge)

Carex cordillerana is a small tufted sedge that grows largely in upland plant communities. It resembles a bunch-grass in appearance, about 6"-14" tall. It flowers during spring, with fruits maturing in early summer.

Existing sites for *Carex cordillerana* occur primarily within three conifer dominated plant associations: Douglas-fir/snowberry, grand fir/snowberry, and ponderosa pine/snowberry. The planning area consists of moist (2 acres) and dry upland (14 acres) forested habitats; Low soil moisture riparian forest (108 acres) and moderate moisture riparian herbland (10 acres).

Most populations have been found in patches, under the forest canopy and in the forest-grassland ecotone as well as within "riparian areas. One population for this species has been located within the riparian area, upriver from the project area. Surveys were conducted during the appropriate time for easy identification of this species.

DIRECT, INDIRECT and CUMULATIVE EFFECTS

It is unlikely that *Carex cordillerana* occurrences exist undetected in suitable habitat within the analysis area. For these reasons, none of the thresholds triggering a trend to federal listing, or a significant risk of a loss of species or population viability would be reached.

As with the majority of sensitive plant species, conclusive information as to their growth habits and how various influences (natural and human) may benefit or negatively impact is largely unknown.

DETERMINATION AND CONCLUSION

This project **may impact individuals or habitat** of *Carex cordillerana*, but will not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species (MIIH).

Cypripedium fasciculatum (clustered lady-slipper)

This member of the orchid family occurs in moist, coniferous forest, often on northerly aspects with filtered sunlight. It occurs around springs, and along riparian zones. Although there are no documented sites on the forest, a historic (1957) record from another area of the forest (East Eagle drainage) does exist and numerous attempts have been made to relocate the species. It has never been relocated.

Cypripedium fasciculatum has an intricate life cycle that is not fully understood. All orchids appear to require the presence of a fungus, usually a *Rhizoctonia*, before the seed will germinate in the wild (Arditti 1967; Doherty 1997; Wells 1981). Doherty (1997) reports that orchid seedlings depend on the fungal symbiont to survive. Once an orchid reaches maturity and becomes autotrophic, the degree of dependence may change. Establishment of new populations requires suitable conditions for the fungus. What these conditions are is not known, but can be presumed to be moist and shady with adequate organic material to support growth of the heterotrophic fungus.

DIRECT, INDIRECT and CUMULATIVE EFFECTS

Literature suggests that activities that remove canopy in large areas or patches close to *C. fasciculatum* populations could alter the microclimate of sites by creating edge effects. Depending upon distance and exposure, there could be changes in several microclimate variables such as air temperature, relative humidity, soil temperature, and moisture (Chen 1995). High-intensity fire that eliminates the duff layer also destroy *C. fasciculatum* rhizomes (Harrod and Knecht 1996). *C. fasciculatum* populations are unlikely to occur; therefore, there would be no cumulative impacts.

DETERMINATION AND CONCLUSION

Because the existence of *C. fasciculatum* on the forest and in the analysis area is very unlikely, this project would have **no impact** (NI) to clustered ladyslipper.

Eleocharis bolanderii (Bolander's spikerush)

Springs, seeps, stream margins, vernal wet swales and moist/summer-dry meadows may support populations of Bolander's spikerush. One occurrence has been documented in the Starkey area of the forest. Although there is potential habitat for this species within riparian zones; none were located. Surveys were conducted at the appropriate time for identification of the species.

DIRECT, INDIRECT AND CUMULATIVE EFFECTS

This species is not common on the forest, but impacts to potential habitat could occur from project activities. However, based on the large area of potential habitat, it is unlikely impacts would occur; therefore cumulative impacts would not increase.

DETERMINATION AND CONCLUSION

This project would have **no impact** to *Eleocharis bolanderii*.

Phacelia minutissima (dwarf phacelia)

Habitat for *Phacelia minutissima* is described as moist meadows and seep edges, or on vernal wet open meadows and barren slopes; and gravely, clay-loam, well drained soils. It has also been reported to be found in association with aspen. This is a small annual species that is difficult to locate once its bloom season has passed. Areas of deciduous shrubs/trees would be salvaged and reused upon the project.

DIRECT, INDIRECT AND CUMULATIVE EFFECTS

This species is not common on the forest, but has been located in small vernal streamlets or road beds. Actions within the analysis area may have the potential to impact any undetected dwarf phacelia populations but are unlikely; therefore the cumulative impacts would not increase.

DETERMINATION AND CONCLUSION

This project **may impact individuals or habitat** of *Phacelia minutissima*, but will not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species (MIH). The project is expected to have no impact (NI) on three species listed below.

Table 8. Effects Call by Species for those 13 species which may have suitable habitat within the Longley Meadows Fish Restoration Project Area

Scientific Name	Common Name	Effect call for BTS Project Alternative 2
<i>Botrychium ascendens</i>	Upward-lobed moonwort	MIH
<i>Botrychium campestre</i>	Prairie moonwort	
<i>Botrychium crenulatum</i>	Crenulate moonwort	
<i>Botrychium lineare</i>	Slender moonwort	
<i>Botrychium lunaria</i>	Moonwort	
<i>Botrychium montanum</i>	Mountain grape-fern	
<i>Botrychium paradoxum</i>	Twin-spiked moonwort	
<i>Botrychium pedunculatum</i>	Stalked moonwort	
<i>Carex cordillerana</i>	Cordilleran sedge	MIH
<i>Cypripedium fasciculatum</i>	Clustered lady's-slipper	NI
<i>Eleocharis bolanderi</i>	Bolander's spikerush	NI
<i>Lycopodium complanatum</i>	Ground cedar	NI
<i>Phacelia minutissima</i>	Dwarf phacelia	MIH

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Appendix A – Sensitive Species Lists
2015 Regional Forester’s Sensitive Plant List/Wallowa-Whitman National Forest

Taxon	Species Code	Scientific Name	Common Name	WAW
BR	ANMI8	<i>Anastrophyllum minutum</i>	Liverwort	D
BR	ANJU4	<i>Anomobryum julaceum</i>	Moss	D
BR	ANJU	<i>Anthelia julacea</i>	Liverwort	D
BR	BALY	<i>Barbilophozia lycopodioides</i>	Liverwort	D
BR	ENBR2	<i>Encalypta brevipes</i>	Moss	S
BR	ENFA2	<i>Entosthodon fascicularis</i>	Moss	S
BR	HAFL9	<i>Harpanthus flotovianus</i>	Liverwort	D
BR	JUPO3	<i>Jungermannia polaris</i>	Liverwort	D
BR	LOGI3	<i>Lophozia gillmanii</i>	Liverwort	D
BR	MNBL70	<i>Mnium blyttii</i>	Moss	D
BR	ORBO	<i>Orthotrichum bolanderi</i>	Moss	S
BR	OREU	<i>Orthotrichum euryphyllum</i>	Moss	D
BR	ORHO3	<i>Orthotrichum holzingeri</i>	Moss	S
BR	ORPE3	<i>Orthotrichum pellucidum</i>	Moss	D
BR	PEQU7	<i>Peltolepis quadrata</i>	Liverwort	D
BR	POCA45	<i>Pohlia cardotii</i>	Moss	S
BR	PRQU2	<i>Preissia quadrata</i>	Liverwort	D
BR	PSTR5	<i>Pseudocalliergon trifarium</i>	Moss	S
BR	PSTE11	<i>Pseudoleskeella tectorum</i>	Moss	S
BR	PTPU2	<i>Ptilidium pulcherrimum</i>	Liverwort	D
BR	SCCI5	<i>Schistidium cinclidodonteum</i>	Moss	D
BR	SCMA10	<i>Scouleria marginata</i>	Moss	S
BR	TEGE	<i>Tetraphis geniculata</i>	Moss	S
BR	TOTOT	<i>Tortella tortuosa</i> var. <i>tortuosa</i>	Moss	S
BR	TOMU70	<i>Tortula mucronifolia</i>	Moss	S
BR	TRQU	<i>Tritomaria quinquedentata</i>	Liverwort	S
FU	HYMI11	<i>Hydnотrya michaelis</i>	Fungus	D
FU	RHBA7	<i>Rhizopogon bacillisporus</i>	Fungus	S
FU	RHSU17	<i>Rhizopogon subclavitisporus</i>	Fungus	D
LI	COCU5	<i>Collema curtisporum</i>	Lichen	D
LI	LEBU5	<i>Leptogium burnetiae</i>	Lichen	S
LI	THMUO	<i>Thelenella muscorum</i> var. <i>octospora</i>	Lichen	S
VA	ACWA	<i>Achnatherum wallowaense</i>	Wallowa ricegrass	D

Taxon	Species Code	Scientific Name	Common Name	WAW
VA	ACROT	<i>Acomastylis rossii</i> ssp. <i>turbinatum</i>	Slender-stemmed avens	D
VA	ALGEG	<i>Allium geyeri</i> var. <i>geyeri</i>	Geyer's onion	D
VA	ASVI10	<i>Asplenium viride</i>	Green spleenwort	D
VA	BOHA3	<i>Boechera hastatula</i>	Hells canyon rockcress	D
VA	BOAS2	<i>Botrychium ascendens</i>	Upward-lobed moonwort	D
VA	BOCA5	<i>Botrychium campestre</i>	Prairie moonwort	D
VA	BOCR	<i>Botrychium crenulatum</i>	Crenulate moonwort	D
VA	BOHE5	<i>Botrychium hesperium</i>	Western moonwort	D
VA	BOLI7	<i>Botrychium lineare</i>	Slender moonwort	D
VA	BOLU	<i>Botrychium lunaria</i>	Moonwort	D
VA	BOMO	<i>Botrychium montanum</i>	Mountain grape-fern	D
VA	BOPA9	<i>Botrychium paradoxum</i>	Twin-spiked moonwort	D
VA	BOPE4	<i>Botrychium pedunculosum</i>	Stalked moonwort	D
VA	BUAM2	<i>Bupleurum americanum</i>	Bupleurum	D
VA	CAMAM	<i>Calochortus macrocarpus</i> var. <i>maculosus</i>	green-band mariposa-lily	D
VA	CANI	<i>Calochortus nitidus</i>	Broad-fruit mariposa-lily	S
VA	CAAT8	<i>Carex atosquama</i>	Blackened sedge	D
VA	CACA12	<i>Carex capillaris</i>	Hairlike sedge	D
VA	CACA13	<i>Carex capitata</i>	Capitate sedge	S
VA	CACO81	<i>Carex cordillerana</i>	Cordilleran sedge	D
VA	CADI4	<i>Carex diandra</i>	Lesser panicled sedge	S
VA	CADU6	<i>Carex duriuscula</i>	Needleleaf sedge	S
VA	CAGY2	<i>Carex gynocrates</i>	Yellow bog sedge	D
VA	CAID	<i>Carex idaho</i>	Idaho sedge	S
VA	CALAA	<i>Carex lasiocarpa</i> var. <i>americana</i>	Slender sedge	D
VA	CAME9	<i>Carex media</i>	Intermediate sedge	D
VA	CAMI16	<i>Carex micropoda</i>	Pyrenaean sedge	D
VA	CANA2	<i>Carex nardina</i>	Spikenard sedge	D
VA	CAPE5	<i>Carex pelocarpa</i>	New sedge	D
VA	CARE4	<i>Carex retrorsa</i>	Retorse sedge	D

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VA	CASA10	<i>Carex saxatilis</i>	Russet sedge	D
VA	CASU7	<i>Carex subnigricans</i>	Dark alpine sedge	D
VA	CAVE5	<i>Carex vernacula</i>	Native sedge	D
VA	CAFLR	<i>Castilleja flava</i> var. <i>rustica</i>	Rural paintbrush	D
VA	CAFR8	<i>Castilleja fraterna</i>	Fraternal paintbrush	D
VA	CARU8	<i>Castilleja rubida</i>	Purple alpine paintbrush	D
VA	CAVI9	<i>Castilleja viscidula</i>	Sticky paintbrush	D
VA	CHFE	<i>Cheilanthes feei</i>	Fee's lip-fern	D
VA	CIBU	<i>Cicuta bulbifera</i>	Bulb-bearing water-hemlock	S
VA	COTE13	<i>Comastoma tenellum</i>	Slender gentian	S
VA	CRSI2	<i>Cryptantha simulans</i>	Pine woods cryptantha	D
VA	CRTH3	<i>Cryptantha thompsonii</i>	Thompson's cryptantha	D
VA	CRST2	<i>Cryptogramma stelleri</i>	Steller's rockbrake	D
VA	CYLUL	<i>Cyperus lupulinus</i> ssp. <i>lupulinus</i>	A cyperus	D
VA	CYFA	<i>Cypripedium fasciculatum</i>	Clustered lady's-slipper	D
VA	ELBR5	<i>Elatine brachysperma</i>	Short seeded waterwort	S
VA	ELBO	<i>Eleocharis bolanderi</i>	Bolander's spikerush	D
VA	ERDA3	<i>Erigeron davisii</i>	Engelmann's daisy	D
VA	ERDI3	<i>Erigeron disparipilus</i>	White cushion erigeron	D
VA	ERHY6	<i>Erythranthe hymenophylla</i>	Membrane-leaved monkeyflower	D
VA	ERPA16	<i>Erythranthe patula</i>	Stalk-leaved monkeyflower	D
VA	EUME17	<i>Eurybia merita</i>	Arctic aster	D
VA	GEPR3	<i>Gentiana prostrata</i>	Moss gentian	S
VA	HECU3	<i>Heliotropium curassavicum</i>	Salt heliotrope	S
VA	ISMI4	<i>Isoetes minima</i>	Midget quillwort	D
VA	JUTRA2	<i>Juncus triglumis</i> var. <i>albescens</i>	Three-flowered rush	D

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VA	KOMY	<i>Kobresia myosuroides</i>	Bellard's kobresia	D
VA	KOSI2	<i>Kobresia simpliciuscula</i>	Simple kobresia	D
VA	LIAR6	<i>Lipocarpa aristulata</i>	Aristulate lipocarpa	D
VA	LIBO4	<i>Listera borealis</i>	Northern twayblade	D
VA	LOER2	<i>Lomatium erythrocarpum</i>	Red-fruited lomatium	D
VA	LOGR2	<i>Lomatium greenmanii</i>	Greenman's desert parsley	D
VA	LOPA8	<i>Lomatium pastoralis</i>	Meadow lomatium	D
VA	LYCO3	<i>Lycopodium complanatum</i>	Ground cedar	D
VA	MUMI2	<i>Muhlenbergia minutissima</i>	Annual dropseed	S
VA	OPPU3	<i>Ophioglossum pusillum</i>	Adder's-tongue	D
VA	PAP012	<i>Packera porteri</i>	Porter's butterweed	S
VA	PEBR5	<i>Pellaea bridgesii</i>	Bridges' cliff-brake	D
VA	PEDEV2	<i>Penstemon deustus</i> var. <i>variabilis</i>	Variable hot-rock penstemon	S
VA	PHMI7	<i>Phacelia minutissima</i>	Dwarf phacelia	D
VA	PHMU3	<i>Phlox multiflora</i>	Many-flowered phlox	D
VA	PIAL	<i>Pinus albicaulis</i>	Whitebark pine	D
VA	PIFL2	<i>Pinus flexilis</i>	Limber pine	D
VA	PLOB	<i>Platanthera obtusata</i>	Small northern bog-orchid	D
VA	PLOR3	<i>Pleuropogon oregonus</i>	Oregon semaphoregrass	S
VA	PODI	<i>Potamogeton diversifolius</i>	Rafinesque's pondweed	S
VA	PYDE	<i>Pyrola dentata</i>	Toothleaf pyrola	S
VA	PYSC4	<i>Pyrrocoma scaberula</i>	Rough pyrrocoma	D
VA	ROCO3	<i>Rorippa columbiae</i>	Columbia cress	S
VA	RORA	<i>Rotala ramosior</i>	Lowland toothcup	S
VA	RUBA	<i>Rubus bartonianus</i>	Bartonberry	D
VA	SAFA	<i>Salix farriar</i>	Farr's willow	D

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VA	SANI8	<i>Salix nivalis</i>	Snow willow	D
VA	SAWO	<i>Salix wolfii</i>	Wolf's willow	D
VA	SAADO2	<i>Saxifraga adscendens ssp. oregonensis</i>	Wedge-leaf saxifrage	D
VA	SUVI	<i>Suksdorfia violacea</i>	Violet suksdorfia	S
VA	SWPE	<i>Swertia perennis</i>	Swertia	D
VA	THAL	<i>Thalictrum alpinum</i>	Alpine meadowrue	D
VA	THEU	<i>Thelypodium eucosmum</i>	Arrow-leaf thelypody	S
VA	TOMO	<i>Townsendia montana</i>	Mountain townsendia	D
VA	TOPA2	<i>Townsendia parryi</i>	Parry's townsendia	D
VA	TRDO	<i>Trifolium douglasii</i>	Douglas' clover	D
VA	TRPA28	<i>Triglochin palustris</i>	Slender bog arrowgrass	S
VA	TRLAA2	<i>Trollius laxus ssp. albiflorus</i>	American globeflower	D
VA	UTMI	<i>Utricularia minor</i>	Lesser bladderwort	D

Taxonomy Class

BR = Bryophyte

FU = Fungi

LI = Lichen

VA = Vascular Plant

WAW Presence = Occurrence on the Wallowa-Whitman National Forest

D =Species that have been documented on land owned or administered by the Wallowa-Whitman National Forest.

S =Species that are suspected to occur on land within the Wallowa-Whitman National Forest.